

Southern California Repeater and Remote Base Association P.O. Box 5967 Pasadena, California 91117

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In the Matter Of:	)	
	)	
Spectrum reallocation in the 2.30	)	ET Docket No. 94-32
through 2.45 GHz Frequency bands	)	
Of spectrum transferred from	)	
Federal Government Use	)	

**RE:** Notice of Proposed Rule Making FCC 94-272

REPLY COMMENTS OF THE SOUTHERN CALIFORNIA REPEATER AND REMOTE BASE ASSOCIATION IN RESPONSE TO COMMENTS ON THE NOTICE OF PROPOSED RULE MAKING

January 05, 1995

- 1: The Southern California Repeater and Remote Base Association (SCRRBA) is a voluntary association of owners and operators of Amateur Radio Service fixed and mobile relay stations operating primarily on the UHF and Microwave Frequency amateur bands. SCRRBA has provided frequency coordination for these activities since 1970. SCRRBA has actively participated in numerous Federal Communications Commission rule making proceedings pertinent to our activities. SCRRBA has filed timely comments on the NTIA Preliminary Report (on reallocation of Government spectrum to non-government use). SCRRBA has filed timely comments and timely reply comments on the FCC Notice of Inquiry 94-32. SCRRBA has filed timely comments on the FCC Notice of Proposed Rule Making 94-272 in this same matter. We hereby respectfully submit our reply comments on this NOI.
- 2: SCRRBA has reviewed the available comments submitted to the Commission as well as possible in the very short time allowed. The principal commenters can be generally categorized as Amateur, Part 15, Private (supporters of private, non-subscription uses), Telco (supporting wireless local loop service), MSS (Mobile Satellite Service), and Commercial Unfortunately, there are a significant number of (supporting subscriber based services). comments which can be categorized as "Me-Too", and add little to these proceedings (beyond an increased administrative burden for the Commission). Most commenters follow the general lead of the NOI and supply a very general description of a proposed class of service. These, unfortunately, do not supply any meaningful technical data on the proposed emissions, nor, in most cases, specific proposed regulations. This serious lack of specific data hampers our analysis of a proposed operation and its potential for sharing with the amateur service. This lack of hard data will also hamper the Commission when rendering a decision on the proposed operations. This lack of data continues to support our claim that the Amateur service must be elevated to Primary allocation status in the entire 2300-2450 MHz band. No material arguments to the contrary have been submitted, as far as we know, and only one non Amateur commenter (In Flight Phone) has provided any meaningful suggestions as to how the terms of the Budget act1 that protect the Amateur service can be satisfied.

<sup>&</sup>lt;sup>1</sup> Which states that the reallocation must not cause disruption of amateur operations, and that feasibility of sharing between a new service and the amateur service must be determined... etc.

- 3: Our most serious concern is for the proposed "Wireless Local Loop" service proposed by Southwestern Bell and supported by a number of Telco commenters. We stated our concerns in our reply comments to the NOI<sup>2</sup>, and we re-emphasize them here.
  - 4: The proposed service providers are asking for an EXCLUSIVE assignment of spectrum<sup>3</sup>. The data supplied does not make the interference susceptibility of these systems clear, but the commenters repeated insistence on exclusive spectrum causes us to be quite concerned that these systems are much like the Pacific Teletrac system operating on the 904-912 AVM segment in many cities in the US. This system (Teletrac) cannot tolerate even minor levels of interference from dis-similar services in the same band. We feel most strongly that the Commission should discourage the use of interference susceptible schemes which obtain interference protection by regulation and regulatory enforcement.<sup>4</sup> (Obviously, some regulatory protection is reasonable, but as such must not be a "crutch")
  - 5: We are surprised that these commenters want to place such a critical part of the national telephone infrastructure on spectrum almost universally considered "awful" due to its proximity to ISM and Part 15 signals. SWBC's own evaluation<sup>5</sup> of the adjacent spectrum (2402-2417) considers its usefulness as "problematic". The NTIA studies<sup>6</sup> and those of other commenters show that ISM interference does not cut off sharply at 2400.000 MHz, but continues well below at significant levels. A substantial majority of the proposed equipment is to be installed in direct proximity with the principal and worst offending ISM device, the residential microwave oven. If the proposed system is not susceptible to such interference, it becomes virtually indistinguishable from other Part 15 uses, and as such could be accommodated in those allocations.

<sup>&</sup>lt;sup>2</sup> See SCRRBA NOI Reply comments at 13-14

<sup>&</sup>lt;sup>3</sup> SWBC summary at 4

<sup>4</sup> see also SCRRBA NOI comments at 20

<sup>&</sup>lt;sup>5</sup>SWBC comments at 9

<sup>&</sup>lt;sup>6</sup> see NTIA preliminary reallocation report appendix 5

6: This service is specifically a Fixed (Point-to-Point) service<sup>7</sup>. The Commission has written rules over the last 40 years specifically discouraging point-to-point by radio where a reasonable substitute is available. The Commission has placed the burden of developing new techniques and improving existing techniques for UHF and then Microwave on the Fixed user rather than the Mobile user. This is apparently continuing as significant spectrum above 1000 MHz is being cleared of Fixed services to provide spectrum for Mobile services now that reasonable mobile technology is being developed. SWBC's objection<sup>8</sup> to a higher frequency than 2400 MHz is unreasonable in light of the ongoing requirements for Fixed services. Establishing a 960 MHz fixed service in the 1950s or a 2 GHz fixed service in the 1960s was more difficult than 4GHz or even 20 GHz is nowadays. There are currently available techniques for Fixed systems which do not require Radio transmissions. SWBC states that the proposed WLL technology is "... competitive in both price and level of service when compared to copper wire and fiber...." 9 corresponding statement is that fiber techniques are competitive with WLL. This places a serious burden of proof on the commenters as to why they should be afforded exclusive spectrum (particularly this low in frequency) when, by their own analysis, there is a suitable non-RF means to accomplish the task.

7: There are situations suggested by the commenters where non invasive techniques for supplying new or improved local loop services are necessary. We submit that these situations could be satisfied by a combination of techniques, resorting to RF means only when absolutely necessary. RF could be used to provide the "cable" to a facility wherein infrared or fiber distribution occurs. This RF path could easily be on the millimeter bands recently reviewed by the Commission. These bands provide significant benefits in freedom from interference and substantial bandwidth wherein the service provider could deliver far more than a few 64KB circuits. We also perceive material benefit to RF distribution in the extreme rural environment. This same environment lends itself easily to the secondary use of an existing allocation. The SWBC and its associates are powerful

<sup>&</sup>lt;sup>7</sup>SWBC summary at 2

<sup>8</sup> SWBC comments at 8

<sup>&</sup>lt;sup>9</sup>SWBC comments at 7

and competent organizations which have the both the skill and financing to search out suitable spectrum on a specific case basis. This task need not be arduous, as the Commission will be certain that the applicant is exhausting all other means to provide the service before applying for an authorization for an RF path.

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- 8: We are concerned that these commenters are pursuing an RF allocation in the 2300 MHz band in order to provide an only slightly improved traditional wireline service. This service is competing with the traditional fiber suppliers (cable television) who are finally committed to converting their plants from copper (coax) to fiber. bandwidth of the fiber systems being installed is sufficient to swallow the telephone services and hardly even notice. The result of this is that there will be a large wasted investment in WLL equipment and spectrum for which the public pays. The locations which cannot reasonably be served by "telco" fiber will also not be served by "cable" fiber, providing considerable combined incentive to deliver these services. This should result in increased fiber "penetration" which will result in reduced need for WLL. It should be noted that once fiber is installed (if done correctly) it can be expanded with additional fibers in the same "pipe" which provides effectively unlimited ability to duplicate the "spectrum" used in the first fiber. We conclude that the proposed WLL service is much less in the "public interest, conveinience and necessity" than it might appear on the surface. There are certain cases which justify an RF service, but they are much more the exception than the rule. The proposed RF segment at 2390-2400 MHz has been shown to be less than desirable, and is much more suited to the incumbent Amateur service which is much more tolerant of interference (from ISM).
- 9: We are rather concerned that the commenters who desire the 2390-2400 MHz spectrum for "private" use overstate the case for the usability of this spectrum. The need for proper private fixed and mobile service spectrum is clear and reasonable, but the need for such spectrum to be free of casual interference is equally clear. A public safety system cannot tolerate having the neighbors microwave oven destroy communications with a field officer. They also cannot tolerate a steady increase in the noise floor in a fixed system requiring periodic "upgrades" to

make the system more "robust", resulting in prohibitive costs. This same spectrum is even less useful for "incident response communications" as the interference from part 15 devices and ISM will, in all probability, move to the scene along with the responding personnel. The incident response trailer or van is likely to have a microwave oven and may have portable telephones or even a wireless LAN to connect nearby trailers in a larger incident.

10: PCIA makes a reasonable case for the need for private microwave spectrum. However, their conclusions that 2390-2400 MHz (and later 2300-2310) will "go a long way toward solving ... needs of the private user community" are in question. As stated in 9 above, and in the NTIA report, the 2390-2400 MHz spectrum is interference prone. PCIA makes an attempt to "appease" the Amateur service by stating that "private systems can co-exist with amateur users... on a shared basis" This is simply wrong. Comments by SCRRBA<sup>12</sup>, ARRL<sup>13</sup> and many other Amateur commenters cite clear explanations why this cannot work. PCIA cites an unspecified example of such sharing in the 450 MHz band. SCRRBA has been performing amateur frequency coordination in the 420-450 MHz amateur band for more than 25 years, and to the best of our knowledge NO such sharing as cited by PCIA has ever occurred. Should this example be the present allocation of 420-430 MHz above line "A" to private radio services in specific cities, it must be noted that amateur operations on 420-430 MHz are PROHIBITED north of line "A". No "sharing" exists.

11: In the general category of Private radio services falls the public safety operations. Our comments at 9 begin the subject. APCO, COPE and others spell out the needs adequately. We have explained the undesirability of this spectrum for critical operations. The County and the Sheriffs Department of Los Angeles make poorly supported pleas for spectrum to transmit live

<sup>&</sup>lt;sup>10</sup> PCIA comments Section II C at 3

<sup>&</sup>lt;sup>11</sup> PCIA comments Section II C at 2

<sup>&</sup>lt;sup>12</sup> SCRRBA NPRM comments at 6, SCRRBA NOI comments at 15-18, 22

<sup>13</sup> ARRL NPRM comments at 5,9,12,16

<sup>14</sup> PCIA comments Section II C at 2

<sup>&</sup>lt;sup>15</sup> This writer personally has participated in 450 MHz frequency coordination activities for more than 25 years - when such activities were done by individuals and long before the formation of groups like SCRRBA. This writer personally participates daily (and has for 25 years) in 450 MHz amateur relay operations. No such sharing arrangement has ever come to my attention.

pictures from their helicopters. There is no technical information supplied except for the comment that 6 MHz is needed for each picture. This most probably indicates a desire to use inexpensive AM VSB TV transmitters. A 6 MHz wide AM system will be very susceptible to interference. Wide bandwidth, AM systems are noted for interference susceptibility. Amateur TV operations in the 2300 MHz band are both AM and FM with FM preferred for its ability to reject at least some interference. The amateur community has shown the County of Los Angeles (and others) how to do inexpensive transmissions from helicopters. Now they want take away the same spectrum we used to demonstrate this ability. This hardly seems fair or reasonable. The County of Los Angeles seems to want between one and ten 6 MHz channels depending on how you read their comments. The County makes a brief analysis of the damage competitive bidding can (and will) do to non-commercial interests. We agree. We will comment on this in our conclusions. The County provides a short list of comments (page 4-5 items A-E) which do not include technical support. They state in item E that Amateur Radio Services should be protected, yet they do not show how, and they propose to have existing amateur spectrum allocated to Public safety video services! We suggest that UHF TV channel allocations could be studied and a few unused channels would likely be found that would accommodate low power low elevation air to ground transmissions of this type. These public safety requirements are city specific, so having a different channel in each city is not material.

12: There are many commenters on the Part 15 allocation at 2400-2483.5 MHz. These commenters universally request that no new service, commercial or private, be added to this spectrum. Indeed, some commenters who support certain other private allocations (Motorola, UTC, TIA, etc) specifically state that those allocations should not come from the existing part 15 band. NONE of the reviewed comments on the part 15 allocation at 2400-2483.5 MHz request or imply that the Amateur Service should be displaced in any way. Metricom writes similarly, but their recommendation for primary, no interference status for Part 15 users is not acceptable to the Amateur community. The Amateur community is barely protected by a superior allocation status in any environment. In the unlicensed environment, such superior status can only be effective when the unlicensed user chooses to cooperate. The commission

<sup>16</sup> Metricom comments at 15

does not have the resources to provide enforcement of part 15 matters. The amateur community would prefer to resolve an interference problem without tying up the valuable time of Commission personnel. The amateur has sufficient flexibility so that, in many cases, he can alleviate the problem without the part 15 user having to become materially involved. There will be unresolvable cases, and where the amateur needs to continue the operation, there must be in place a regulatory avenue for relief. If the amateur allocation status is clearly above part 15 in the rules, and the disclaimer about interference continues to be packaged with all part 15 devices, the amateur stands a chance of solving the problem without Commission involvement. Should the amateur become co-primary, there is no longer any basis for adjudication, nor does the part 15 user have any way to really understand his position. Co- status means work it out for yourself, without help. The amateur frequency coordination process has woefully inadequate backing in the present rules, and there is no such thing as part 15 frequency coordination since the user is unlicensed.

13: In Flight Phone Corp. (IFFC) offers the only comments with any technical meat from an RF standpoint. It would appear that their suggestions are plausible, and they are the only service which has offered a meaningful sharing plan. Unfortunately, they missed an item in their analysis. They apparently assumed the "band plan" in effect in Southern California applied to the while country. Unfortunately, this is not the case. This does not prevent the proposed AAVS, it just makes the process a little more complex. Common alternative usage for the lower 6 MHz of 2390-2400 MHz is for AM television transmissions. An item we missed in the first review of IFFC's proposal was that the proposed AAVS service would have two different service providers. IFFC has behaved well toward the Amateur community, so-far, but nothing can be said of the unknown "alternate" supplier. The other MUST item is that Amateur frequency coordination processes must be better and formally recognized in the rules in order to provide a stable platform to build a relationship with the commercial parties.

14: It must be clearly understood at this point that the amateur service CAN NOT survive with an allocation status below Co-Primary when the other party is not the government. Amateur operations are in serious jeopardy in a Co-Primary status, but, if the co-user is reasonable from

the Amateur perspective, such allocation may work. If the co-user is a variable growth beast like a commercial service, the amateur will be forced to vacate the spectrum within very little time. Co-Primary with a public service system is counter productive. The amateur cannot offer his services to the community if that community is using the same spectrum for its operations.

15: We have commented extensively on the viability of amateur sharing with part 15 operations. 17 Most of these comments are rather negative in nature. We explain the most likely cases of interference we can visualize. We hope that these will be rare occurrences, but, reality intervenes to remind us that the part 15 activities are increasing very rapidly in type and "dispersion". We expect the usability of the 2400-2450 segment to steadily decrease with time (given a stable regulatory environment). The usability of the 2390-2400 MHz segment will also decrease in usability, but, hopefully at a much slower rate. We can hope that the ISM and Part 15 manufacturers will steadily improve their products so as to minimize radiation in this segment. The Amateur community is willing to put up with the inevitable, but we MUST count on the Commission to protect our only clean spectrum in the 2GHz region; 2300-2310 MHz. If this segment is either lost or diluted, the usability of the entire 2300-2450 MHz set of segments is lost.

16: There is a potential for creating a coordinated sharing plan for use by the mobile satellite services. Unfortunately, insufficient technical data was provided to make a definitive analysis. MSS space to earth spread spectrum usage would most likely be compatible with Amateur uses between 2390 and 2399 MHz (note guard band to protect amateur satellite operations at 2400-2410 MHz). However, we do not see how the Radio Astronomy services at 2380 MHz can be protected. Earth to space use is possible, but there needs be significant regulation of the mobile antenna pattern. <sup>18</sup> We note with surprise that the MSS commenters seem to expect some feeder link spectrum below 14 GHz. This seems unnecessary as feeder service technology at and above 14GHz is used on a daily basis (by the video services).

<sup>&</sup>lt;sup>17</sup>SCRRBA NOI comments at 16

<sup>18</sup> see SCRRBA NOI reply comments at 20

17: A very large portion of the commenters dispute the proposal in the NPRM to allocate the proposed spectrum by competitive bidding. Most cite sufficient legal precedent to bring the entire concept of competitive bidding over this spectrum into question. Arguing these relative merits is beyond the scope of SCRRBA's comments, but, we must state that a commercial user placed on this spectrum by competitive bid will be the WORST co-user and the least willing to cooperate. We also note that the private and public safety commenters complain (correctly) that they are unable to compete in a competitive bidding situation. They should not have to so compete as doing so is counter productive to the overall intent of the communications act. We wish to remind these Private radio users that the Amateur service is in exactly the same position with respect to them! We can no more compete with the Private radio service than they can compete with the Commercial radio service.

18: There are some commenters supporting the commercial "PCS" type service in the proposed spectrum. PCS has obtained a tremendous amount of prime spectrum quite recently. It is time for other uses to obtain a share. PCS has quite enough spectrum for now.

Review and Conclusions (quoted from our comments on the NPRM)

- 19. The NTIA has directly failed in its assigned tasks:
- 1: ".. avoid excessive disruption of amateur use of existing Federal Government frequencies" 19
- 2: ".. consider the extent to which commercial users could share the frequencies with Amateur Radio licensees" 20
- 3: Determine substitute frequencies "if the reassignment will disrupt the existing use of a Federal Government band of frequencies by amateur radio licensees" 21

<sup>&</sup>lt;sup>19</sup> Omnibus Budget Reconciliation Act of 1993, Section 113.a.1.C.iii

<sup>&</sup>lt;sup>20</sup> Footnote 9 Supra, Section 113.a.3.C

<sup>&</sup>lt;sup>21</sup> Footnote 9 Supra, Section 114.b.2.E

- 20. The Commission is faced with an apparent requirement to re-allocate a band that has not been properly made available for re-allocation. We state that NONE of the 2300-2450 MHz spectrum presently assigned to amateur operations can be re-allocated until the codified requirements are met. In order to avoid further violation of the stated sections of the Budget Act, the Commission appears to be prevented from assigning other than Primary status to the Amateur service in the 2300-2310, 2390-2400, 2402-2417 MHz segments. We ask the following:
- 1: The Amateur service be assigned exclusive<sup>22</sup> Primary status on the bands 2300-2310, 2390-2400, 2402-2417 MHz- until and unless suitable replacement spectrum is assigned. We also ask for primary status on 2400-2402 and 2417-2450 MHz, should the NTIA be disposed to agree.
- 2: A vigorous attempt be made to persuade the NTIA to find replacement spectrum pursuant to your report 94-213. See our NPRM comments at 10-11
- 3: That any service assigned the amateur spectrum on a secondary basis be required to use interference resistant techniques (e.g. spread spectrum) to minimize the mutual impact on amateur operations.
- 4: That Amateur frequency coordination activities be codified in order to bring sufficient stability to the Amateur activities on these frequencies to allow meaningful interface with any proposed co-spectrum user<sup>23</sup>.
- 5: That the Commission vigorously reject any attempts to reduce or dilute our only clean segment in 2GHz, 2300-2310 MHz.

<sup>&</sup>lt;sup>22</sup> by exclusive in this context we mean that there is no CO-Primary allocation made. Part 15 secondary to the amateur service should remain as it is

<sup>&</sup>lt;sup>23</sup> we ask the Commission to note that Amateur frequency coordination activities are regional and NOT national in nature.

6: That any proposed specific limitations to be imposed on Amateur activities be

the matter of an additional proceeding in order that proper comments can be filed.

7: That similarly, any specific proposed rules for new or additional use of this

amateur spectrum be the matter of an additional proceeding in order that proper comments

can be filed.

21: We have shown the limited usability of the spectrum from 2390-2450 MHz. Most

commenters agree. We have brought into question the viability of some of the services who are

grabbing spectrum or trying to carve out a niche where there is no place for them. We have

explained our activities and our reasoning in detail in our NOI comments, Reply comments,

NPRM comments, and these Reply comments. The ARRL has similarly filed on these matters.

The ARRL comments in this 2.3GHz issue are particularly sharply on task and on target.

22. The amateur community has shown its willingness to subject itself to unprecedented

restrictions to maintain access to portions of this spectrum. The Commission is our principal

protector in the fight to keep our spectrum safe from the ravenous commercial appetite for

more spectrum. We again ask your help.

Respectfully submitted,

For the SCRRBA Board and Technical Committee

MVRahin Critchell